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Theater Ballistic Missile Defense: The Need
for an Operational Commander

by

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A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy

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Theater Ballistic Missile Defense: The Need for an Operational Commander

Introduction

As a result of Iraq's use of SCUD missiles in the Gulf War, the Joint Chiefs of Staff set out to develop a joint doctrine for countering the ballistic missile threat. This doctrine, released in March 1994, entitled Doctrine for Joint Theater Missile Defense serves as a guide to operational commanders for the development of a missile defense plan. The theater missile defense (TMD) doctrine uses a systematic approach based on the principles of war and lessons learned from Desert Storm. However, the doctrine is flawed in the area of command and control, because it violates the principle of unity of command by not designating a commander responsible for the objective of missile defense. The doctrine should reflect the magnitude of joint force involvement and the requirement for an integrated response by designating a commander at the joint force component level.

This paper takes a five step approach to prove the need for a theater missile defense commander. To reach that conclusion, we'll look at 1) the ballistic missile threat and how adversaries might employ these missiles in future conflicts; 2) how TMD doctrine aids in countering the threat; 3) the joint force response necessary to implement TMD doctrine; 4) the Iranian hostage rescue operation and the invasion of Grenada as two

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classic examples of lessons learned from joint military operations that violate the principle of unity of command; and finally, 5) a recommendation for establishing a theater missile defense commander.

The Ballistic Missile Threat

During the second day of Desert Storm, Iraq launched a total of seven SCUD ballistic missiles¹ at Israel and Saudi Arabia in response to coalition bombing. That same day, General Schwarzkoph was summoned before the Saudi King, King Fahd, to explain what the coalition was doing to suppress the attacks. In General Schwarzkoph's reply, he assured the king that the SCUDs "...posed little real threat".² So if the SCUDs were no real threat, why was CENTCOM scrambling to develop an effective counter-SCUD plan? And if the SCUDs were no threat, why were approximately one-third of the air sorties originally tasked with executing the first stage of the air offensive diverted to hunt SCUDs?³

The reason is because the SCUDs, a type of theater ballistic missile, were in actuality a threat. While the SCUDs may not

¹ U.S. Dept. of Defense, Conduct of the Persian Gulf War, (Washington: 1992), Chaps. I-VIII, p. 225.

² H. Norman Schwarzkoph & Peter Petre, It Doesn't Take a Hero, (New York: Bantam Books, 1992), p. 487.

³ Ibid., p. 486.

have been a tactical threat capable of achieving any significant military advantage, they were a threat capable of altering the strategic balance of the war. In fact, after the SCUDs landed in Israel, dozens of Israeli war planes took-off ready to strike Iraq. Fortunately, through diplomatic persuasion, the deployment of Patriot surface-to-air missile batteries to Israel, and an agreement to attack a list of Iraqi targets; Israel agreed to stay out of the war⁴. However, if Israel had not shown such restraint, the potential consequences could have divided the coalition and changed the focus of the war. These conclusions were articulated in the report to Congress on the Conduct of the Persian Gulf War which stated:

...almost certainly [Israeli intervention] would have led to a war between Israel and Jordan and allowed Saddam Hussein to change the complexion of the war from the liberation of Kuwait to another Arab-Israeli conflict. It might easily have brought down the government of Jordan and replaced it with a radical one. The Coalition's unity would be tested severely, with potentially major repercussions.⁵

If the old saying is true that more can be learned from failure than success, there should be a plethora of lessons one can learn from Iraq's performance in the war. Our challenge is to identify those lessons potential adversaries will adopt regarding the use and effectiveness of ballistic missiles.

⁴ Ibid., p. 484.

⁵ U.S. Dept. of Defense, p. 223.

One lesson which comes directly from the war is that ballistic missiles can support objectives on all levels of warfare. At the tactical level, the missiles can be used to target troops, at the operational level they can be used to destroy or damage key deployment areas (ports, airbases, logistical centers, etc.), and at the strategic level they can target civilian population centers, both inter and intra theater.⁶

The above use of ballistic missiles is primarily framed around the way Iraq chose to employ SCUD missiles. But we must be careful not to limit our thinking about weapon system capability simply based on how they were used under the military leadership of Saddam Hussein. In other words, the effectiveness and method of employment under a competent military commander, with properly trained troops, and a sound doctrine may bring vastly different results. This takes us to the second lesson our enemies should have gleaned from the Gulf War.

Iraq used SCUDs primarily as a retaliatory weapon with conventional warheads. However, ballistic missiles can also be used as a deterrent weapon. This is especially true if combined

⁶ Michael W. Ellis and Jeffrey Record, "Theater Ballistic Missile Defense and U.S. Contingency Operations," Parameters, Spring 1992, p. 17.

with unconventional warheads.⁷ Iraq was defeated because of U.S. intervention. So in future conflicts, one way for adversaries to keep the U.S. from flexing its military muscle is to threaten neighboring regional countries with weapons of mass destruction, if they allow the U.S. access to bases and/or logistical infrastructure.⁸ Given the capability of ballistic missiles to deliver nuclear, chemical, or biological weapons, this becomes a legitimate threat and a viable strategy.

With the broad array of options ballistic missiles can add to an enemy's arsenal, it is reasonable to expect an increase in their use. Additionally, looking at Table 1, it is clear that the proliferation of these weapons is very widespread. This proliferation, coupled with North Korea and Iran producing ballistic missiles indigenously⁹, further emphasizes the fact that future conflicts will almost certainly involve ballistic missiles.

⁷ W. Seth Carus, Ballistic Missiles in the Third World, (New York: Praeger, 1990), p. 6.

⁸ Thomas G. Mahnkan, "America's Next War," The Washington Quarterly, Summer 1993, pp. 171-179.

⁹ Carus, pp. 18-21.

**Deployed Ballistic Missiles in the Third World
(Missiles with Ranges >150Km)¹⁰**

MISSILE:	SCUD-B	KOREAN SSM	HATF II	JERICO I	CSS-2
VARIANT:	AL-HUSAYN AL-ABBAS			JERICO II	
RANGE km	300-900	260	300	625-1500	3000
COUNTRY:	Afghanistan Egypt Iran Libya North Korea South Yemen UAE Vietnam	South Korea	Pakistan	Israel	Saudi Arabia

Table 1

TMD Doctrine for Countering Theater Ballistic Missiles

Having established that theater ballistic missiles pose a real threat, the next step is to design a framework that operational commanders can use to provide the necessary operational protection against the enemy's firepower. To help develop a theater missile defense (TMD) plan, the joint force commander (JFC) can begin by reviewing Joint Publication 3-01.5, Doctrine for Joint Theater Missile Defense:

Theater missile defense is inherently a joint mission; therefore, joint force components, supporting CINCs and multinational force capabilities must be integrated toward the common objective of neutralizing or

¹⁰ James Edward Pitts, "Theater Ballistic Missiles: An Emerging Role for the Navy," (Masters Thesis, Naval Postgraduate School: 1992), p. 9.

destroying the enemy's theater missile capability. This must be integrated into and in support of the Joint Force Commander's overall concept of the operation and campaign objectives.¹¹

These words from the doctrine are helpful in two important ways. First, they define the overall objective, or *end state*, that the JFC is trying to achieve--neutralizing or destroying the enemy's theater missile capability. Secondly, it specifies theater missile defense (TMD) is a joint operation that must be integrated toward a common objective. In short, the JFC must have unity of effort from joint forces to be successful.

The doctrine also provides a systematic method, *the ways*, for countering theater missiles. The publication states:

A single measure cannot provide complete protection against a determined theater missile attack. A combination of passive defense, active defense, and attack operations, all fully integrated and coordinated by a robust and efficient C⁴I architecture, is required to meet the stringent performance requirements demanded of theater missile defense.¹²

With doctrine spelling out the end state, the means (i.e. joint forces), and the ways; are there any decisions left for the JFC to make in the area of theater missile defense? The answer, of course, is yes. In fact, the decision that remains is probably the most critical decision the JFC will make in regard

¹¹ Joint Chiefs of Staff, Doctrine for Joint Theater Missile Defense, Joint Pub 3-01.5, (Washington: 1994), p. I-2.

¹² Ibid., p. III-1.

to TMD. That decision is how to organize the forces and, more importantly, determine if there is a need for a single commander responsible for missile defense.

Current doctrine calls for centralized planning with execution responsibility shifting to the component commanders. The doctrine calls for "close coordination" among the commanders, but it does not call for one commander to be in charge of missile defense. This may be a sound approach if the preponderance of forces belong to one of the component commanders. But, as we'll see, implementation of the joint TMD doctrine requires significant contributions from a large number of service disciplines. So if TMD is "inherently a joint mission" that requires integration toward a "common objective" shouldn't there be someone in charge? Two relevant discussion points will help shed some light on the need for a TMD commander. First, is the magnitude of joint force involvement and second, is the consequences of relying on coordination rather than command lines for success in joint operations.

Joint Forces Involved with Theater Missile Defense

Theater missile defense is a mission that is relatively new to our war fighting lexicon and therefore, is not inherent to any of the service doctrines. To illustrate this point all we have to do is look at the preparations for the Gulf War. Our initial planning for TMD was predicated on three assumptions that proved

to be invalid. These assumption were 1) Iraq would launch from fixed or known sites; 2) if mobile launchers were used there would be long set-up times that would provide ample opportunity for coalition forces to attack prior to launch; 3) Iraq would not use decoys to complicate the problem of destroying SCUD launchers.¹³ Furthermore, the only viable means to defend against the missile once launched was the Patriot surface-to-air missile system. The Patriot began development in the early 1960s as a replacement for the Hawk anti-aircraft system. The notion it could shoot down a missile was "something of an afterthought."¹⁴

The Gulf War brought to a head the reality that our forces must defend against ballistic missiles and that no single service has the autonomous means to counter the threat. To appreciate the degree of joint force interdependence, let's look at the forces required to execute the three methods outlined in the TMD doctrine (passive defense, active defense, and attack operations) along with the C⁴I structure necessary to tie the methods together.

¹³ U.S. Dept. of the Air Force, Gulf War Air Power Study (GWAPS)-Draft, (HQ USAF, Washington: 1993), p. 23.

¹⁴ James F. Dunnigan and Austin Bay, From Shield to Storm High-Tech Weapons, Military Strategy, and Coalition Warfare in the Persian Gulf, (New York: William Morrow, 1992), p. 186.

Passive Defense

TMD doctrine breaks passive defense down into four principle measures: tactical warning, reducing targeting effectiveness, reducing vulnerability, and recovery and reconstitution. For the most part, success in these areas of passive defense is based on the degree of planning prior to the conflict. All, that is, except for tactical warning which requires a real time network that is responsive to the enemy's actions. For instance, in planning for counter-SCUD operations in Desert Storm, our knowledge of a SCUD launch sequence was derived from Russian exercises and Iraqi operations during the Iran-Iraq war. This intelligence led our planners to believe that SCUDs would emanate an electromagnetic signature our sensors could detect.¹⁵ From the signature data, the potential existed for up to 90 minutes of warning time under ideal conditions. However, during the war, Iraq changed their method of employment and significantly reduced the pre-launch time. Consequently, warning time was also reduced. In the future, if the enemy can completely mask the pre-launch signatures by such means as land lines and/or concealed launch facilities, then warning time may be reduced to just the flight time of the missile.

The bottom line is that we cannot depend on one method or type of sensor for warning. It requires complementary systems

¹⁵ U.S. Dept. of the Air Force, GWAPS, p. 28.

that form a network to adapt to changes in the enemy's tactics. The challenge for the theater commander stems from the fact that the systems necessary to develop a complementary warning network are provided by multiple services and agencies (see Table 2). Additionally, these systems may not be dedicated to the TMD mission. They, most likely, have multiple tasking for which TMD may be a lower priority. Therefore, when a system is not available for TMD, other sensor systems must be brought on line to maintain an adequate degree of coverage.

The aspect of warning which we have just been through is that of detection, but warning also consists of disseminating the information throughout the theater. This information must go to all forces, both our own and coalition, both land and sea, along with civilian population centers in the region. The process of information distribution must be continually evaluated for connectivity as forces maneuver or as new forces are brought into the theater.

Sensors/Systems Involved with TBM Warning¹⁶

Sensor/System	Service/Agency	Function
TPS-75 Radar	USAF	Ground based air surveillance
TPS-59 Radar	USMC	Ground based air surveillance
AEGIS SPY Radar	USN	Shipboard air surveillance
AWACS	USAF	Airborne air surveillance
E-2 Hawkeye	USN	Airborne air surveillance
Cobra Ball (RC-135)	National asset	Airborne reconnaissance
Joint STARS	USAF/USA	Airborne ground surveillance
Rivet Joint (RC-135)	National Asset	Airborne reconnaissance
U-2	National Asset	Airborne reconnaissance
RF-4	USAF	Airborne reconnaissance
F-14 (TARPS)	USN	Airborne reconnaissance
DSP Satellite	USSPACECOM	Space-based launch detection

Table 2

¹⁶ Air Combat Command, Theater Air Defense BMC'I Vision for Theater Missile Defense, (Langley AFB, VA: 1994), pp. 21-24.

Active Defense

Active defense focuses on "killing" the missile once it is launched. When we think of killing missiles, the Army's Patriot system is the first thing that comes to mind. The Patriot was the only real means available to defend against airborne SCUDs during the Gulf War. On the surface, active defense seems to be an easier command and control problem than the warning portion of passive defense. After all, Patriots are controlled at the operational level by the Area Air Defense Commander who provides a clear command link. But, as more systems come on line with the capability to shoot down missiles, these clear command lines will quickly blur.

The Navy is in the process of modifying the Aegis radar and Standard SM-2 missile for a seaborne TMD capability. The Navy's objective is to protect "ports, airfields, and amphibious objective areas."¹⁷ A Naval capability will add mobility and flexibility to the JFC response to a TMD threat as well as provide access to coastal areas that are not yet supported by a basing structure.

The Aegis/SM-2 combination has potential for providing a tremendous capability. But with the added capability also comes the complication of asset allocation at the theater level. TMD

¹⁷ William D. Smith, "Creating Defenses Against Theater Ballistic Missiles is an Awesome Challenge," Seapower, January 1994, p. 12.

operations will have to take into account the dynamics associated with operations at sea. For example, can the Naval component commander afford to dedicate Aegis assets to the TMD mission or are they also required for fleet defense? Or, if the enemy is able to mine coastal accesses, how much land coverage will the Aegis be able to provide? Granted, up front planning will be able to solve most of these issues, but as Helmuth von Moltke said "no plan survives the first contact with the enemy."

Attack Operations

In the two previous TMD methods of operation, the emphasis has been on mitigating the effect of a missile once launched. In effect, the plan is to catch the spear once thrown. As long as the warhead is conventional this may be acceptable. However, if the objective is to limit damage or the missile is equipped with a nuclear, chemical, or biological warhead, the potential cost of even one warhead landing could be unacceptably high. Taking a common sense approach then, the most effective way of preventing a warhead from getting through is to prevent the launch. This is the focus of the attack operation phase listed in the TMD doctrine.

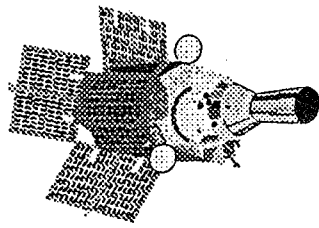
As previously stated earlier in the paper, almost a third of the air sorties in the first phase of Desert Storm were dedicated to SCUD hunting--AKA attack operations. Because SCUD hunting was primarily conducted with airborne assets, the joint force air

component commander (JFACC) was responsible for abating the SCUD threat. His job was to eliminate the SCUDs while executing the main effort of the air operations against Iraq. The coalition forces were fortunate to have air supremacy throughout the theater. Both the aircraft used for locating SCUDs and the attack aircraft were able to operate at will over enemy territory. While aerospace control is listed in Air Force doctrine¹⁸ as a core mission, it is by no means assured that in future conflicts our aircraft will be able to operate with impunity in enemy territory.

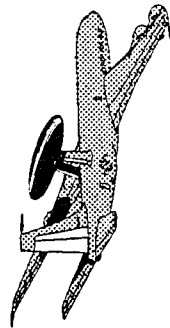
Take for instance a Korean scenario where ballistic missile launch sites might be located in mountainous territory and protected by surface-to-air and anti-aircraft artillery. Countering ballistic missile sites in this scenario will take a combination of air, ground, and sea assets (Figure 1) to conduct attack operations. Air assets would be controlled by the JFACC, but he/she could not task ground or sea forces (except of course, carrier air assets allocated to the JFACC). It will require coordination between the component commanders to obtain unity of effort.

¹⁸ U.S. Dept. of the Air Force, Basic Aerospace Doctrine of the United States, (HQ USAF, Washington: 1992), p. 7.

THEATER MISSILE DEFENSE JOINT FORCE ATTACK ASSETS



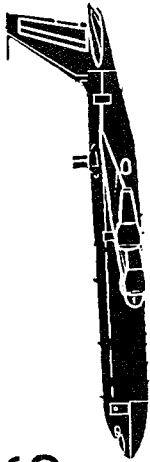
SATELLITE



AWACS



AF STRIKE

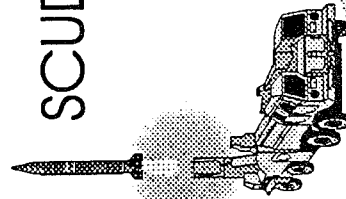


JSTARS

RIVET JOINT

EC-135

SCUD



SOF



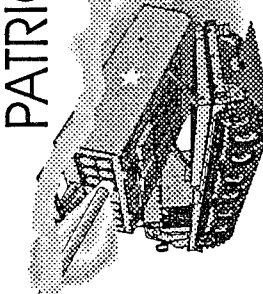
ARMY

STRIKE

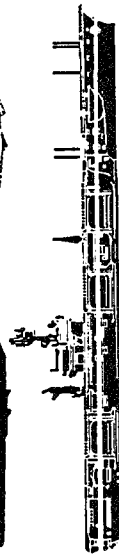
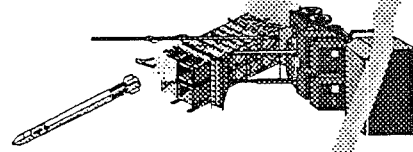
AEGIS



PATRIOT



ATACMS



NAVAL AIR

TLAM

FIGURE 1

Command, Control, Communications, Computers, and Intelligence C⁴I

C⁴I provides the systematic approach to integrate TMD operations. Having the intelligence information, communication network, and computers capable of accessing all forces is vital to ballistic missile defense. But in the big scheme of warfare, the TMD requirements for intelligence, communications, and computers are a subset of the requirements necessary for the JFC to plan and conduct theater level military operations. This does not mean that TMD will not have unique requirements, it just means in these areas the requirements are driven by the overall theater mission, not TMD. So if we use simple algebra and take communications, computers and intelligence from the TMD C⁴I equation, we're left with C², command and control.

With current doctrine relying on centralized planning and decentralized execution of TMD operations, the means for an effective and efficient response relies on coordination. In other words, below the JFC no one is in charge of TMD. Looking at past joint operations that relied on coordination and not command lines, we see there is a potential to adversely hinder mission success when clear command lines are not in place.

Lessons Learned in Command and Control of Joint Forces

Sticking with the adage that one can learn from mistakes, we'll look at the Iranian hostage rescue operation and the invasion of Grenada as two classic examples of operational

problems caused by the lack of a commander. In both cases, mission success was dependent on joint forces operating toward the achievement of a common objective.

In the Iranian rescue operation, the operational plan required Army, Air Force, Marine, and special forces to execute as an integrated task force. The joint task force (JTF) was commanded by an Army Major General. When the operation commenced, the JTF commander remained in Egypt with "no individual deployed with the force who was responsible to integrate and coordinate the efforts of all the elements."¹⁹ The true impact of not designating a commander during the operation came to light when the decision to abort the mission was given after the crash of a helicopter and a C-130 at the airfield in Iran code named Desert One:

...some of the helicopter pilots said they didn't know or recognize the authority of those giving orders at Desert One. These pilots therefore logically questioned the orders to abort the mission and abandon their helicopters. Neither did a C-130 loadmaster recognize the individual who first advised him of the abort order. Further confusion about who was in charge was probably created when Col Beckworth [the Army force commander] went from one C-130 crew to another yelling at them to not take-off on their own initiative until the Delta Force was loaded. It is easy to imagine the turmoil and confusion present when multiple commanders were all yelling orders while C-130 and helicopter

¹⁹ Stephen E. Anno and William E. Einspahr, "Command and Control and Communications Lessons Learned: Iranian Rescue, Falklands Conflict, Grenada Invasion, Libya Raid," Unpublished Research Paper, Air War College, Maxwell AFB, AL: 1988, pp. 3-11.

engines were running and an aircraft burned alongside.²⁰

Determined not to repeat the integration problems experienced in the Iranian desert, Admiral Metcalf, joint task force commander for the Grenada invasion, made a "...deliberate planning effort...to keep units separate".²¹ By dividing the island in half--allocating the northern half to the marines and the southern half to the army--there wasn't a perceived need for a component commander in charge of ground operations. This approach worked fine as long as the army and marines operated in their respective areas. But as the forces began to work in close proximity to each other, problems began to occur. As Maj Gen Ferris, Commander U.S. Forces Grenada said afterward:

...When you have forces operating in proximity and you don't have a common commander, then what happens is that people have some disagreements and then they bicker and then argue. And it takes time to do all that and to debate things and to decide what's going to be done. You don't have time for that in combat. There needs to be a guy there that can say here's the way we're going to do it, here's the resources we are going to use to do it with.²²

²⁰ Ibid., p.10.

²¹ James G. March and Roger Weissinger-Baylon, Ambiguity and Command Organizational Perspectives on Military Decision Making, (New York: Harper Collins, 1986), P. 283.

²² Staff Report to the Committee on Armed Services, "Defense Organization: The Need for Change," (Washington: 1985; reprinted ed., Navy Times, 1984), P. 368.

In both cases the lesson is clear: if you expect to have a unified effort in combat there must be a clear line of command, because when decisive action is necessary there is no time for coordination.

Recommendation: A Commander for TMD Operations

After exploring the two discussion points that a JFC must consider--the magnitude of joint force involvement and past experience of joint operations without a clear chain of command--the need for a single commander for TMD becomes quite apparent. It is clear that mission success is heavily dependent on the use of joint forces. Additionally, if we look at the command problems associated with past operations, we can see that relying on commander coordination can lead to confusion among the forces. Therefore, to provide unity of effort for the objective of TMD, the JFC needs to designate a single commander for TMD.

There are many ways to organize, but the organizational structure must reflect the situation at hand. One recommendation on how to implement a TMD commander is to follow the JFACC model. The JFACC is responsible for the planning, coordinating, allocation, and tasking "based on JFC apportionment decisions."²³ So a TMD commander, like the JFACC, would only have tasking authority for those assets designated by the JFC. Under this

²³ Joint Chiefs of Staff, Doctrine for Joint Operations, Joint Pub 3.0, (Washington: 1993), p. GL-9.

concept the primary responsibility of the TMD commander would be a daily tasking order representing the responsibilities and apportionment of forces in support of the TMD mission. The tasking order would flow to the component commanders who would be responsible for executing the order.

By adding a commander for TMD, the JFC would no longer have to rely on component commander coordination as the sole means for effective and efficient response to the threat. Additionally, if the JFC doesn't want to physically add another commander to the organization, he/she may elect to dual hat an existing component commander with the responsibility for the TMD mission.

Who is designated as the commander is important, but even more critical is the act of designating a commander. Therefore, the way to incorporate the addition of a TMD commander without directing how it must be accomplished is to modify our joint doctrine. The doctrine should reflect the principle of unity of command which is defined as "one responsible commander for each objective."²⁴ This modification will provide the JFC with guidance plus the flexibility to organize his forces as necessary to accomplish the overall mission.

²⁴ Ibid., p. A-2.

Conclusion

Ballistic missiles pose a threat to our success in future conflicts. Because of the varied options that they provide adversaries across the spectrum of warfare and their widespread proliferation, operational commanders will have to prepare to counter ballistic missiles in all regions of the world. To guide the JFC in creating a TMD defense plan, joint doctrine was developed to cover the objective, forces, and organizational structure. Unfortunately, in developing the doctrine, the principle of unity of command was violated by failing to designate a commander responsible for TMD operations. From past experience, we have seen that without someone in charge of force integration, the potential for confusion is high. To alleviate this situation, TMD doctrine should be modified to reflect the requirement for an operational commander.

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